REVIEW OF ALBERTA CROWN CRUDE OIL MARKETING PROGRAM

Prepared For

Alberta Resource Development

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I. INTRODUCTION

The Alberta Department of Resource Development (ADRD) retained Purvin & Gertz, Inc. (Purvin & Gertz) to conduct an independent evaluation of the operations of the private marketing agents that are currently marketing the Alberta Crown's share of royalty crude oil. The Alberta Government began to market its crude oil utilizing private sector agents commencing June 1, 1996. As the agency agreements expire on June 1, 2001, the ADRD intends to evaluate the success of the privatization initiative to assess how this program might be conducted in the future.

In July 1997, Purvin & Gertz reviewed the marketing agents' performance following the first year of operations. During this review, it was found that the operations were successful, and that most of the administrative transition had been made. Further efficiencies and improvements were expected to develop as the ADRD systems were completed. The softening in crude prices forecast for 1997 was expected to create a more difficult market for the agents, which would require a greater focus on strengthening the working relationship between the ADRD and each of its agents.

In this report, Purvin & Gertz evaluates the operations of the private marketing agents including an assessment of the performance of the marketing arrangements during the fiscal years (April to March) of 1997 and 1998. A review of pricing performance, working relationships, and current issues is included.

Purvin & Gertz has not addressed potential year 2000 recognition problems in this analysis and the results assume zero impact from year 2000 recognition problems.

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Purvin & Gertz conducted this analysis and prepared this report utilizing reasonable care and skill in applying methods of analysis consistent with normal industry practice. All results are based on information available at the time of review. Changes in factors upon which the review is based could affect the results. Forecasts are inherently uncertain because of events or combinations of events that cannot reasonably be foreseen including the actions

of government, individuals, third parties and competitors. **NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.**

II. SUMMARY AND CONCLUSIONS

The following points summarize the findings from Purvin & Gertz' review of the performance of the marketing agents during the fiscal years of 1997 and 1998, as well as relevant observations of the operational aspects of the Crown's crude oil marketing program and agency agreements.

- **Overall, the outsourcing of sales of Crown production to agents continues to be successful. It is Purvin & Gertz' opinion that the agents are providing a value added service to the Crown.** Price performance in 1997 and 1998, as measured by the ADRD's benchmarking program, was maintained during a period of very volatile markets.

- **Posted prices used in performance monitoring continue to be appropriate benchmarks, and in nearly all of the pools, each agent has met or exceeded the benchmark prices in its sales of Crown crude oil.** Purvin & Gertz evaluated the suitability of the postings used in the benchmarking program and have concluded that the postings are representative of market values.

- **Crude oil marketers, including the Crown's agents, are becoming more aggressive to maintain or increase their margins.** This is reflective of a very competitive market and is resulting in increased initiatives by each agent to improve its own financial performance.

- **The Crown's objective in the marketing of its crude oil is to maximize its revenue net of supply costs.** However, as agents strive to increase their profitability through third party margin business, there is concern that there is a potential conflict on how these margins should be shared between the Crown and its agents.

- **To improve overall profitability, agents have increased third party marketing activities which has created some management issues between the agents and the ADRD that need to be reviewed.** Third party marketing includes transactions with third parties, and may include buy-sell arrangements, transactions upstream of the feeder systems, and utilizing proprietary assets or arrangements. These transactions have resulted in issues that are part of an ongoing dialogue between the ADRD and the agents, but there are some disagreements. The primary issue is related to the extent that the Crown should share in any increased value which the agent generates through such initiatives. There is a difference in understanding between the agents and the ADRD regarding this issue, and it has emerged over the past year to be a significant issue which needs to be addressed in order to maintain the strong performance of the marketing program.

- **Some pools have been redefined due to changing market conditions and this reallocates the Crown's and the agents' share of the pool.** There has been agreement in some cases, but disagreements have occurred in other cases. The

primary issue is that such changes are fair to both the Crown and the agents, and that the Crown's volumes continue to benefit from pooling with the agent's volumes.

- **Accounting procedures were streamlined by ADRD over the past year when it moved to a new software platform.** This accounting process is used by the ADRD as it executes its responsibility for royalty volume reconciliation, the royalty adjustment process, and validation of costs and net revenues for royalty valuation purposes. The procedures require the agents to supply source documents, including shippers balances and contracts.

- **Concerns were expressed by the agents that the ADRD's accounting process creates an extra burden for them.** The ADRD has found that errors or omissions occasionally occur in the information that they receive from the agents. The ADRD prepares an issues list to deal with these discrepancies. Usually, additional documentation beyond the source documents are required to allow resolution of the issues, and this takes extra time and effort for both the agents and the ADRD.

- **The accounting effort undertaken by the ADRD is viewed by the agents as a duplication of their activities but is warranted in Purvin & Gertz' opinion.** The primary reason for the ADRD's administrative activities is for verification and reconciliation of royalty production. In addition, the ADRD has identified some accounting omissions and errors by the agents that have resulted in higher net revenues for the Crown, but it has also identified benefits that accrued to the agents.

- **Additional guidelines on risk management issues are required to completely define the risk tolerance of the Crown.** The agents have stated that they could add more value to the Crown's sales if they could implement a risk management program. These guidelines should still allow the agent to develop it's own risk management program. The Crown will need to balance a conservative approach to risk against the need to keep agent volumes in the Crown pools.

- **The Crown volumes have been declining over the past several years, and they declined substantially in late 1998 and early 1999 due to the price sensitive royalty in place in Alberta.** The marketing agents experienced declines relative to 1997 in the range of 40% to 60% in late 1998 and early 1999 due to low crude oil prices. Each agent received significantly less revenue for marketing the Crown's volumes during this time, even though the marketing effort remained unchanged.

- **Volatility in Crown production resulting from poor forecasting of royalty production by producers, declining production, and the sensitivity of Crown production to crude oil price has forced high inventories in some pools.** This issue was exacerbated in late 1998 and early 1999 when crude oil prices fell, and extra inventories were required as a contingency to be able to meet sales delivery commitments. Legislation which uses penalties or other measures to encourage accurate forecasting by producers, and development of a risk management program for excess inventories, should be considered to address this issue.

- **Indications are that the agents have successfully managed recent government initiatives.** One agent administers the Crown's commitment to the Express pipeline. It is likely that the agent will request the Express initiative to be managed under a separate fee structure in the future, as the cost of managing this initiative has been significantly greater than its other marketing activities for the Crown. The importance of measuring current performance of both the transportation commitment and the price realization should not be underestimated as this will become a significant factor in establishing how these initiatives are managed and compensated in the future.

- **With the continuing decline in the Crown's volumes, it is apparent that soon there will not be sufficient volumes to warrant three marketing agents.** The decline in volumes in late 1998 and early 1999 placed each agent under increased financial pressure, as most of a marketer's costs are fixed costs, and provided a clear message that at lower volumes, it would be difficult to sustain three agents without an appropriate adjustment to either volume allocation and/or fees.

RECOMMENDATIONS

The following recommendations are included based on the assessment and findings from Purvin & Gertz' review. Although the overall marketing program is working well, we believe urgent attention to the following should be given, as they are important to the ongoing soundness of the agency relationships, and will be important elements in any extensions of the agreements or in development of new agreements for future marketing assistance.

- **Clarification is required regarding the extent to which the Crown should share in third party marketing activities.** The ADRD should identify those activities in which it believes it is entitled to share based on the agency agreements, and to provide a framework that allows decisions to be readily made on excluding certain activities from the agreement. After such identification, dialogue with each agent is recommended to reach closure on this issue.

- **The ADRD should prepare guidelines for each agent regarding third party marketing activities, required information needed for accounting purposes, and risk management.** These guidelines should be reviewed with each agent before finalizing. The objectives of such guidelines would be directed at improving the understanding of each of the parties, and provide a platform which reduces outstanding issues and provides a better basis to deal with new issues as they arise.

III. DISCUSSION

There are three agents which market the Crown's crude oil. They are Tidal Energy Marketing Inc. (Tidal), PanCanadian Petroleum Limited (PanCanadian), and Canpet Energy Group Inc. (Canpet). Purvin & Gertz conducted the review of the marketing of the Crown's crude oil volumes through interviews with each agent and ADRD representatives along with an analysis of information provided by these parties. The following discussion summarizes our findings.

AGENT OPERATIONS

As shown below, each agent is responsible for a different set of crudes. In their respective agreements, each agent was allocated certain pools for which they had responsibility.

ALBERTA CROWN'S CRUDE OIL MARKETING AGENTS

	Approximate Volume (B/D)		
	1996	May 1999[1]	Crude Types
Tidal Energy Marketing Inc.	80,000	37,000	Light Sweet
PanCanadian Petroleum Limited	48,000	22,000	Light Sour, Bow River
Canpet Energy Group Inc.	13,000	5,000	Light Sweet, Heavy

Note: (1) Volumes have increased since May as a result of stronger crude oil pricing.

The agency agreements are based on a pooling concept. Pooling Crown volumes with other production marketed by the agent allows the sales revenue to be averaged for all production marketed by the agent, and the Crown's share of the net sales revenue returned to the Crown. This was intended to provide each agent with an incentive to maximize the sales price for all marketable production. The sales revenue for the pool is offset by any purchases required to balance the pool. All costs associated with transportation and equalization of the Crown's volumes are deducted from the Crown's sales revenue.

Overall, the outsourcing of sales of Crown production to agents has been quite successful. Based on the review of the marketing performance, Purvin & Gertz believes that the agents are providing a value added service. Performance, based on the benchmarking program in place, has been maintained with only a few exceptions. This has been achieved during what has turned out to be extremely volatile and difficult markets. The experiences during the past three years, have, however, identified some issues that require follow-up and may influence how future agreements are structured. These included:

- Accounting issues primarily related to the agents' view that there is duplication of efforts between the ADRD and the agents.

- A request for clarification by the agents on how to identify and account for volumes marketed for third parties or other activities that provide additional margin for the agents' operations.

- The need for additional guidelines on risk management issues that would allow the agents to become more aggressive with marketing Crown production.

- Improvements in communication between the ADRD and the agents is needed to continue to improve the existing systems and obtain closure on the outstanding business issues.

- The agents have indicated that volatility in the Crown volumes results in higher costs than originally expected and has created difficulties in marketing the pooled production.

- Feedback from the agents responsible for managing the government initiatives indicated that initiatives that have been rolled in to the crude marketing activity, such as the Crown's commitment to the Express pipeline, incur higher costs and may require independent fee schedules.

ACCOUNTING ISSUES

The ADRD is responsible for royalty volume reconciliation, the royalty adjustment process, and validation of costs and net revenues for royalty valuation purposes. The agents supply source documents to the ADRD, including shippers balances and contracts. Based on these documents, the ADRD accounting system prepares a remittance statement that should match the remittance statements provided by the agents. If the agent does not provide the required information, or if there are errors or omissions, an issues list is generated by the ADRD for resolution with the relevant agents. Discrepancies identified in the issues list are to be recorded on a monthly basis.

The accounting procedures continue to be streamlined with the ADRD accounting system now using a new platform that has improved turnaround times and reduced data input requirements. Discussions with the agents indicate that there remains a concern that the ADRD is duplicating the volume and revenue accounting procedures that are also undertaken by the agents. Follow-up to the monthly issues report generated by the ADRD in some cases continues to provide concern to the agents even with the new system. In response, the ADRD believes, however, that the objectives of the ADRD accounting process are independent from the agents because of the ADRD's responsibility for royalty volume reconciliation and the royalty adjustment process.

The ADRD's system has caught errors and omissions which were missed by the agents. If the Crown relied on an annual audit of the agents, it is possible that some discrepancies may be caught, but there is a concern that properly trained auditors would not catch all of the

discrepancies. We understand that earlier audits undertaken by the Crown of each agent did not detect some of the oversights which the ADRD's system discovered.

Based on our discussions with the agents, many of the concerns with the accounting practices appear to be related to reporting exceptions to the standardized information requirements developed by the ADRD. When there is incomplete information or errors, the ADRD adds this to the issues list for resolution, and this results in an extra burden to both the agents and the Crown to resolve. Many business issues have surfaced as the marketing agents become more aggressive in the marketplace. Some of these are discussed below under third party marketing activities. These business issues can create lengthy settlement times. If these business issues can be resolved through mutual agreement between the agents and the Crown, the accounting issues should become less of a concern for the agents. However, it does require the ADRD and the agents to meet and agree on procedures to deal efficiently with the varied sales arrangements.

THIRD PARTY MARKETING

In response to the current business climate, the marketing agents have become more aggressive and have developed third party marketing activities that provide them with additional revenue sources. The agents have pointed out that these arrangements are entered into as opportunity trades to improve their financial performance. They are not part of the balancing process required to market Crown production, but the Crown is realizing additional value through participation in these arrangements through pooling of the sales transactions. These activities become apparent to ADRD when transaction volumes from the shippers balances do not reconcile with the volumes included in the agents remittance statements, or when agents propose that the volumes of these opportunity trades should be removed from the pool. Of most concern to the ADRD is the removal of volumes from the pool, which therefore excludes the Crown from participating in any of these value added trades associated with marketing third party production. The ADRD's view is that the intent of the current agreement is a partnership between the Crown and each of its agents due to the agency agreements, and that the agent's ability to generate the third party business is helped by the leverage provided by the additional volumes supplied by the Crown.

The most common practice of third party marketing which has become apparent to ADRD appears to be related to shipments of crude on pipeline systems which ship crudes under "buy-sell" arrangements. In the case of "buy-sell" shipping, it is possible to achieve a desired crude mix through a variety of trades. Trades are typically of similar crude quality, but can also involve purchasing one type of crude quality, and receiving another. The crude received back may not be a crude type that the agent markets for the Crown, and therefore an accounting pool may not exist as part of the agents accounting program. Such trades can be difficult for the ADRD to track, and the distinction between marketing for the Crown and value added trading for the marketing agent is currently not well defined as per the arrangements between the Crown and its agents.

Another example of third party activities undertaken by the agents occurs when an agent is able to capture a margin between the pool netback price and the price paid to

purchase crude volumes upstream of the feeder systems. The agents believe this is their own business activities, including risks, which are to their own accounts, and should not be shared with the Crown. The ADRD believes that such purchases should be included in the pool, and that the Crown would share in any value added or losses which are created by the agents in such purchases.

In our review of the agent agreements, we found that the process for removing third party volumes from the pools is not clearly defined. This, in our opinion, is the most major issue which is outstanding today, and it has grown as an issue in the past year as the agents have developed new initiatives to capture more profitability in a very competitive market. Based on the mixed comments received from the agents, we recommend that guidelines on the removal of volumes from the pools be clarified and reviewed with the agents, and then adopted as supplements to the agreement.

RISK MANAGEMENT

The agents have adopted a very conservative approach to using the commodity futures market to manage price risk, with individual contract terms for pricing being used to minimize price exposure as opposed to using the futures market. During the interview process, however, there was significant feedback on related risk management issues. Both the agents and the ADRD are working to try and resolve complex issues that can have a significant impact on the agents' ability to respond to market conditions while maintaining the Crown's conservative approach to hedging Crown production. The agent agreements limit all hedging activities to operational hedging for up to two months, thereby minimizing the potential for exposure in the futures markets.

Performance of the agents is also benchmarked against posted prices with the Crown having the right to terminate the agreement if performance is not maintained against the benchmark. There were some concerns expressed that suggested the benchmark comparison limits the incentive to seek further value added steps such as using the futures market.

Based on the feedback from the interviews, the key issues regarding risk management currently under review include:

- The use of futures markets to take advantage of trading opportunities or reduce price exposure is not used.
- An agent has the right to remove volumes from the pool to take advantage of opportunities that require futures trading which could limit the Crown's sharing within a pool, and
- A need for general clarification on risk management principles, including clarification regarding the two month operational hedging which is permitted under the agency agreements.

The agents were in agreement that the Crown needs to further clarify its policy on managing price risk. Each agent, because of the unique aspects of the crude oil streams they

are responsible for, have defined different issues that need to be addressed in the policy. These issues can all be grouped under a common policy on risk management.

The performance of one of the pools did not meet the benchmark criteria. This occurred in late 1998 when one of the agents entered a long-term sales arrangement to sell one of the Crown's heavy oil streams to a refiner at a fixed price differential. Since it was one of the smaller crude pools, the overall impact was limited but still was significant compared to the size of the pool. The resulting underperformance highlights the importance of preparing guidelines for management of price exposure, and that these guidelines should not be limited to only the use of financial tools that can be used to hedge prices.

The agents also indicated that they require additional guidelines on removing hedged production from the Crown pools. This would allow them to implement their own risk management policy, which may be based on a similar or significantly different view on risk tolerance and what constitutes risk. This will require the ADRD to balance a conservative approach to risk tolerance with a desire to maintain producer and third party production in the Crown pools.

Some of the key points that should be addressed in the policy include inventory targets, hedging policy for excess inventory, acceptability of fixing crude price differentials, locking in of market timing using futures, and termination clauses for term arrangements.

COMMUNICATIONS BETWEEN PARTIES

Both the ADRD and the agents agreed that a committed effort to maintain and continue to improve communications between the parties should be a priority. This includes identification of the appropriate channels of communication, and a clarification of which people should be involved depending on the subject. However, there are concerns from all parties that response times on key issues needs to be improved. The ADRD generates a monthly issues list to try and facilitate communication on accounting issues, but has indicated the response time from the agents has not met its expectations. The agents believe that the ADRD has not provided timely and clear decisions on key issues and has forced them to move ahead before full agreement was reached (which creates uncertainty).

A more structured format for communication between the agents and the ADRD is likely required. This will help to establish the proper lines of communication, agree on addressing priorities, and hopefully provide closure on outstanding issues. Regular scheduled review meetings (i.e. quarterly) would help facilitate the communication between the parties.

VOLATILITY IN CROWN PRODUCTION

Volatility in Crown production has continued to remain a concern for both the Crown and the agents. Some agents have had a more difficult time with the volatility depending on the type of crude oils they are marketing, and the size of the pools that are being managed. One of the agents indicated that in order to ensure that marketing commitments are satisfied, higher inventory levels have been maintained. Volatility in Crown production within the crude

pools established for the agents is significantly higher than a producer's production due to the price component in determining royalty requirements, and poor forecasts provided by producers. Migration of field production between pools also contribute to short term volatility as producers optimize disposition based on netback prices.

Based on discussions with the Crown, draft legislation to address the poor forecasting of royalty production by producers is currently under internal review. The proposed forecasting requirements incorporate penalties associated with inaccurate forecasts and should help to improve the forecasting of Crown volumes. The proposed legislation would not offset declines in royalty production associated with the decline in conventional crude production in Alberta, but rather would be aimed at encouraging producers to provide more accurate forecasts of their production including their royalty production.

There was also a concern by the agents that the marketing revenues collected have significantly been reduced with the decline in Crown production, and that the costs to maintain the program have remained fixed. This was likely a contributing factor encouraging the agents to more aggressively develop third party business to supplement their financial positions.

This was particularly a concern as crude oil prices fell in late 1998 and early 1999. The Crown's royalty share is based on a price sensitive formula, and drops as crude oil prices drop. Total Crown volumes declined from an average of 143,000 B/D to as low as 64,000 B/D by 1998 fiscal year end. Although this is an ideal mechanism for a producer, it puts much pressure on the Crown and its marketing agents when crude oil prices drop. Tidal's crude oil volumes dropped from an average of 80,000 B/D in 1996 to as low as 34,000 B/D in early 1999, although it has recovered somewhat by mid-1999. Heavy crude volumes declined significantly as prices dropped, and this compounded the decline in the Crown's volumes. Both PanCanadian and Canpet experienced significant declines due to the drop in prices.

APPROXIMATE CROWN ROYALTY VOLUMES (DECLINES VS. 1996)

	1996 (Avg)	1998 (Avg)	Decline	March 1999	Decline
Light Sweet	95,000	53,000	44%	44,000	54%
Light Sour	18,000	11,000	40%	7,000	60%
Heavy	30,000	17,000	43%	13,000	57%
Total	143,000	81,000	43%	64,000	55%

The agents have suggested that in the future a sliding fee scale may be required to protect against declining volumes.

As shown above, the Crown's royalty volumes have been declining, and it is expected that further declines are inevitable as Alberta crude oil production is from mature basins and few new discoveries have occurred recently to slow down this decline. Based on our review of the volumes which each agent has left to market, and based on the flat marketing fee, we believe that a level is being reached which is marginal to continue to use three agents. Consideration should be given when renewing the agency agreements to drop down to using

only two agents. Alternatively, if three agents are retained, a higher agency fee rate for lower volumes would likely be warranted.

GOVERNMENT INITIATIVES

As part of the agency agreements, the agents have actively managed various government initiatives on behalf of the Crown. The West Coast Initiative was managed by Gulf (now Tidal) under a separate fee structure, and although the initiative is currently inactive, it could be reactivated by the Crown. The Crown is also a participant on the Express pipeline and its shipping commitments are managed by Tidal as a special initiative.

Tidal advised that the Crown has received high value under the Express initiative, as there are high administrative costs to manage the Express volumes. Although there were no separate benchmarks originally defined for any of the government initiatives, the agency agreement has been revised and now includes benchmarking for Express volumes. Sales of crude under the Express commitments require complex accounting procedures as a result of the various ownership interests and shipping commitments by the participants in the Express pools. The Express volumes are also very sensitive to forward prices in the market and timing structures of contracts. The benchmarks do not allow performance in managing the timing structure of contracts to be evaluated, which could be a concern. The new benchmarking program along with a clear risk management policy should be implemented as soon as possible as this could become a significant factor in how these initiatives are managed and compensated in the future agency agreements.

PERFORMANCE BENCHMARKS

The benchmarking process incorporated into each agency agreement evaluates on a monthly basis the performance of the marketing agent against posted prices for crude oil within the province. Contracts associated with a crude oil pool, for a given month of delivery, are compared against the monthly average of the posting. This provides a means of quantifying the performance of the agent against benchmark crudes.

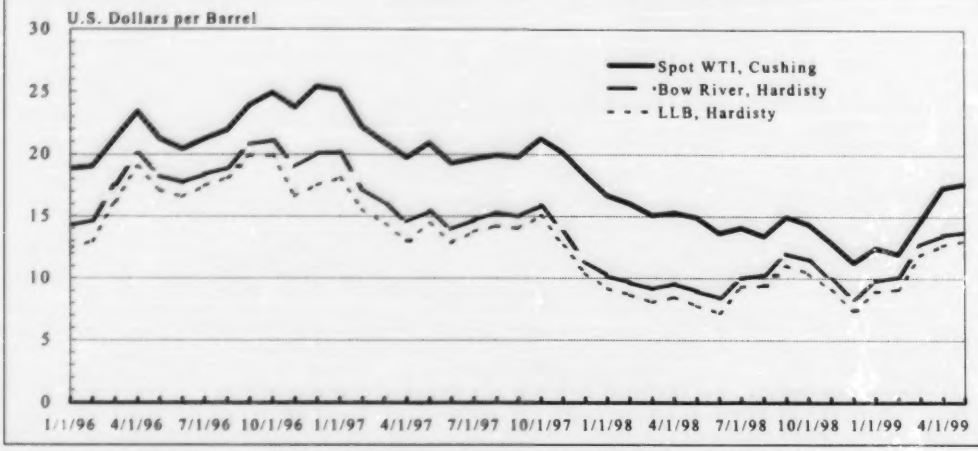
Purvin & Gertz reviewed the suitability of the postings used in the benchmarking process to ensure that postings are representative of the fair market value of the benchmark crude. Based on our analysis, the current benchmarks used in performance monitoring continue to be representative of market value, and have verified the performance of the agent.

GENERAL MARKET CONDITIONS

Both domestic and international crude oil traders use the price of West Texas Intermediate (WTI) crude oil, in Cushing, Oklahoma, as a key benchmark for crude oil pricing. Delivery of WTI in Cushing is the delivery mechanism for NYMEX related futures trading and is therefore traded in significant volumes in both in the physical and paper markets. It is the most widely traded crude oil in the world and thus has a particular importance. For this

analysis, we have used WTI as the benchmark price for inland crude oil in North American markets as many North American crude purchases are contracted using WTI related formulas. Historical prices for spot WTI in Cushing are shown in Figure III-1.

FIGURE III-1
SPOT WTI, CUSHING



The international crude oil markets have been very dynamic over the past few years. Prices for WTI increased quite dramatically early in 1996, eventually peaking at $25 per barrel by late in the year. The market has since reversed and, following a brief stabilization at the $20 per barrel level in mid 1997, collapsed to $12 per barrel late in 1998. This had a dramatic impact on the supply/demand balance in world markets, and forced OPEC and other large national producers to aggressively cut production in order to improve world markets. Since implementing production quotas, prices have returned to levels above $20 per barrel.

Regional differential values for crude oils are determined based on a variety of factors that include location, quality, and timing structures. Bow River crude prices, sold in Hardisty, Alberta, is shown in Figure III-1 to illustrate the impact of price differentials on regional crude oils. Canadian heavy crude oil experienced strong pricing both on an absolute basis and relative to WTI during most of 1996. Prices for heavy crude fell much faster than light crude oil during 1997 and effectively reached a floor price by early 1998. At price levels below $8 per barrel, many heavy crude oils are no longer economical to produce. Lower producer cash flows, combined with poor prospects for development of future reserves, increased decline rates for existing producing fields and significantly slowed drilling activity.

Volatility in production volumes, when driven by price volatility, creates significant challenges for crude oil marketers. During periods of declining markets, sourcing supply shortfalls in regional markets can become difficult, especially for marginally priced crude oils. Traditional price formulas may not provide producers with sufficient netbacks to commit future production, which could require modifications to contract terms to mitigate some of this risk.

During periods of rising production, marketers are forced to develop new markets, which may require aggressive pricing and spot price discounts. During these volatile periods, term arrangements may continue to price based on historical relationships, and may not respond immediately to the short-term dynamics of the marketplace. The large price swings, and associated volatility in supply, have therefore created a challenging market for the agents. This is especially true for the marketing of Crown royalty production, which is significantly more sensitive to crude prices as a result of the royalty formulas in place.

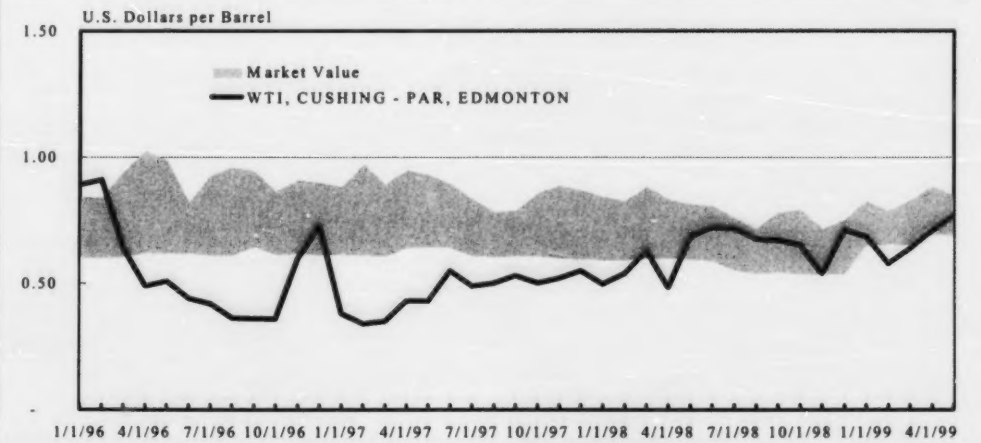
LIGHT SWEET CRUDE

Based on the benchmarking results provided by the ADRD, the overall performance of the agents in marketing the light sweet royalty crude oils has been positive with all sweet pools showing positive gains over the benchmark pricing. Benchmarking results for the agents indicated premiums in the range of C$0.03 to C$0.16 per barrel were achieved for the major pools.

Purvin & Gertz evaluated the suitability of the posted prices used for benchmarking by comparing the posted price to other international benchmarks. An expected trading range verses WTI was calculated based on the market fundamentals. Deviations from this range were analyzed to determine if local supply/demand or transportation issues explained the deviation.

Our approach for the analysis of light sweet crude oils was to compare the cost of Canadian sweet crude, delivered into the Chicago refining center and adjusted for quality, against WTI delivered from Cushing. A trading range was defined based on two methods for adjusting quality. Quality adjustments can be through equalization using industry equalization scales, or differences in calculated refining values using typical product yields from a simple refinery configuration. The results of our analysis are presented in Figure III-2.

FIGURE III-2
SPOT WTI, CUSHING - PAR, EDMONTON



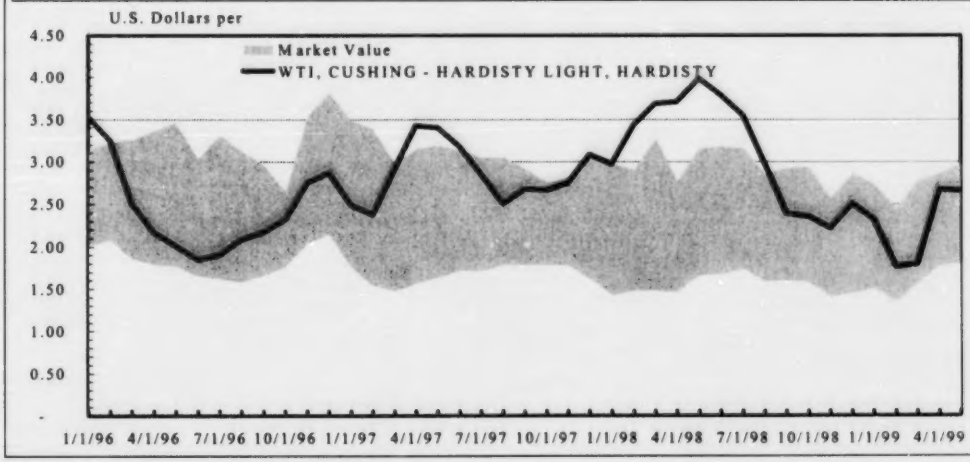
Our analysis shows that Canadian postings for light sweet crude oil were within or slightly above the expected trading range verses WTI. During 1996, the inland crude oil markets were strongly affected by the strong demand for spot WTI, both in the physical and futures markets. The strength in pricing was capped by competition with international crude oils delivered via the USGC. Prices have since returned to the expected trading range.

Posted prices are transparent, but do not represent all sales, as many sales (including the agent's sales in most cases) occur at prices slightly higher than the postings. These premiums can be due to the size and term of the volume under contract for each individual trade. Posted prices are primarily established by refiners for their purchases. Unfortunately, there are not any other available transparent prices of Canadian crude oil sales. The analysis described above provides a fundamental review of recent history, and shows that Canadian light sweet crude posted prices have been quite strong, although it is possible that the average price might be slightly above the posted prices, particularly in periods when Canadian prices appear stronger than market values. For benchmarking purposes, we believe posted prices are still the best available. Most importantly, though, as long as the Crown's volumes are part of larger pools marketed by the agents, the Crown has comfort that it is getting the best price available from that agent. If, however, an agent is able to separate the Crown volumes from its pools, then a better benchmarking system may be warranted. Due to the difficulty of obtaining better benchmarks, it is imperative that the Crown work closely with the agents to ensure that the Crown volumes fully share in the pools marketed by the agents.

LIGHT SOUR CRUDE

Based on data provided by the ADRD, the performance of the agents in marketing the light sour streams was similar to the light sweet streams with benchmarks being exceeded by as much as C$0.11 per barrel in the larger pools.

FIGURE III-3
SPOT WTI, CUSHING - HARDISTY LIGHT, HARDISTY

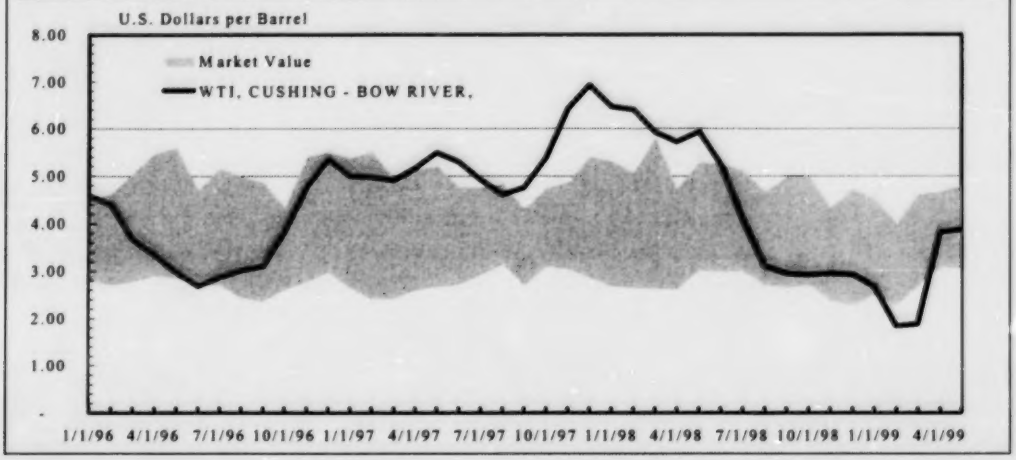


Canadian light sour crude oil postings were evaluated based on quality relationships to Canadian light sweet crude oil. The price range expectations for light sour crude oil was based on the refining quality from two generic refinery configurations. Our results indicated that light sour crude oils traded close to the bottom of the range for most of 1997 and 1998. The depressed pricing during mid-1998 was a result of heavier light sour streams, such as Hardisty Light, being discounted due to weakness in the heavy crude oil markets. Lighter streams in this category, such as Light Sour Blend in Cromer, Saskatchewan, were not discounted to the same extent. The Edmonton based light sour streams, such as Koch Alberta, are blended with the Hardisty Light stream for deliveries to Eastern Canada, and also experienced severe discounting during this period. Figure III-3 shows our analysis for Hardisty Light postings.

HEAVY CRUDE

Data provided on the performance of the agents in marketing the heavy crude oil streams has shown more mixed results than the light streams. However, with one exception, the major pools have exceeded the benchmarks.

FIGURE III-4
SPOT WTI, CUSHING - BOW RIVER, HARDISTY



The suitability of the heavy benchmarks was evaluated in a similar manner as that used for the light sour streams. Figure III-4 shows one of the heavy crude oil postings, Bow River, along with the expected trading range calculated using quality adjustments. Typically, the heavy postings are very cyclical but remain within a trading range bound by refinery quality adjustments verses lighter crude oils. During the summer asphalt season, heavy crude oils will trade at the higher end of the range due to increased demand by asphalt operations. Winter demand is much softer, which drives trading differentials to the lower end of the range. The rapid increase in the supply of Canadian heavy crude during 1997 resulted in an absence of the price strength typically seen during the summer season. This weakness carried forward to

the 1997/1998 winter season. Oversupply, combined with a rapid decrease in absolute crude prices, created an extremely difficult market for heavy crude. Narrow trading differentials remained until a floor price was reached mid 1998. Many heavy oil producers shut in production and allowed higher decline rates by significantly reducing drilling and maintenance programs. Although heavy differentials improved, these were associated with low absolute pricing until overall price levels began to improve early in 1999.